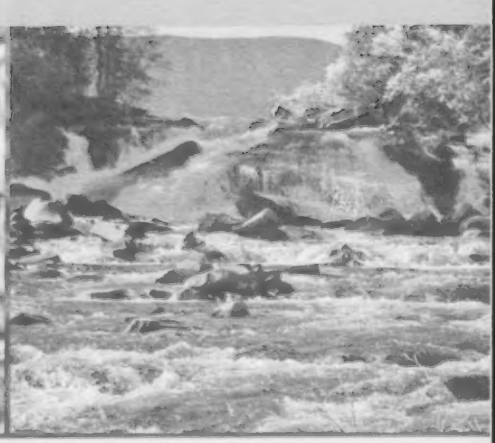
Progress Report 2012



ENERGY STRATEGY FOR YUKON

Yukon Government

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Minister's Message

As Minister of Energy, Mines and Resources, I am pleased to release this second progress report on the *Energy Strategy for Yukon*.

The *Energy Strategy for Yukon* is a comprehensive strategic document that guides the actions of our government as they relate to energy. This progress report, demonstrates how the Government of Yukon is following through on its commitment to address Yukon's energy needs, for now and for the future.

As outlined within the pages of this progress report, the Government of Yukon and its partners are actively implementing those actions included in the strategy and working to achieve the goals established by the strategy.

As a result, the Government of Yukon is on course to achieve its energy efficiency targets, and it continues to work to realize efficiency and conservation priority actions that will reduce energy consumption, costs and emissions.

One example is that we are on track to exceed the 2009 *Energy Strategy for Yukon*'s renewable energy target of a 20% increase in Yukon's renewable energy supply by 2020.

Since launching the *Energy Strategy for Yukon*, the Government of Yukon, residents of the territory, energy stakeholders and interest groups and the two electric utilities have met frequently in working groups, workshops, and consultative meetings to find ways to make the best use of Yukon's energy generating resources. This work has resulted in actions that reflect the priorities for energy under the strategy.

The Government of Yukon favours increased energy efficiency as the best response to high energy prices, environmental concerns and assisting us in meeting our future energy needs.

We will continue to stay on course to achieve our energy efficiency targets, and will continue to work to realize efficiency and conservation priority actions that will reduce energy consumption, costs and emissions.

Sincerely,

Brad Cathers
Minister of Energy, Mines and Resources
Government of Yukon

Summary

This *Energy Strategy for Yukon - 2012 Progress Report* is divided into the government's vision to improve energy efficiency and conservation, produce more renewable energy, meet electricity needs, responsibly develop oil and gas and make good energy choices.

Each energy category is divided by priority items. This Progress Report explains what actions have been taken within the Government of Yukon, departments within the Government of Canada present in the Yukon or with its partners to research, explore and take action in bringing these priorities to fruition.

Efficiency and Conservation:

- The Yukon government offers a comprehensive suite of energy efficiency programs to the Yukon public. These programs are accessed by over 1,000 Yukon citizens per year and include: the Good Energy Rebate Program, the Refrigerator Retirement Program, the StartPoint Building Energy Benchmarking Program, the QuickStart Energy Saver Kits, Community Energy Planning and the Commercial and Institutional Building Energy Planning (CIBEP) Program.
- The Yukon government has worked closely with its two utility partners to develop a comprehensive electrical Demand Side Management (DSM) strategy for Yukon that would offer programs and opportunities for Yukon homeowners and businesses to reduce their electricity consumption. This plan is targeting 8.5 GWh/year in sustained electricity saving by 2018.
- The Yukon government is engaged in a number of training, pilot projects and other initiatives designed to raise energy efficiency knowledge and capacity within the territory. These include energy efficiency related courses, workshops and energy efficient product pilot projects.

Renewable Energy:

- The vast majority of electricity generation in the territory comes from renewable energy sources. In 2012, 95% of electricity demand was met by renewable energy and nearly 20% of our heating demand was met by renewable wood-based heating. Per-capita this is greater than any other jurisdiction in Canada.
- The Aishihik third turbine and Mayo B projects have increased Yukon Energy Corporation's renewable generation capacity by 22%, thus exceeding the territory's target of increasing renewable energy 20% by 2020.

- The Yukon government has committed to meeting 20% of the government's building space heating needs through clean energy sources by 2020. In an effort to meet this target, the Yukon government is evaluating a number of renewable energy heating projects and has completed two major projects: the Whitehorse correction facility biomass boiler project and the Dawson wastewater treatment plant biomass boiler.

Electricity:

- The electricity-based contribution to greenhouse gas (GHG) emissions makes up 2-3% of total emissions in the territory.
- The Aishihik third turbine and Mayo B projects have increased Yukon Energy Corporation's renewable generation capacity by 22%, thus exceeding the territory's target of a 20% increase by 2020.
- Yukon Energy Corporation is actively evaluating the economic viability of other renewable energy technologies, including wind, solar, biomass and geothermal energy; however, the utility must prove economic viability to the Yukon Utilities Board before proceeding with project development.
- The Yukon's electrical utilities are not the only mechanism through which new electrical generation can be developed. The Yukon government is actively working to develop policies that will allow private citizens, First Nation communities, municipalities and businesses to contribute to adding new forms of clean electrical generation to the grid through the development of net metering and independent power production policies.

Oil and Gas:

- Yukon amended the Yukon *Oil and Gas Act*:
  - to expand the definition of a Gas Processing Plant to include liquefied natural gas energy;
  - to remove the requirement for a consent clause from First Nations without a Final Agreement, which will put all First Nations on a level playing field with respect to consultation; and
  - to improve liability and penalty provisions in the Act to facilitate better regulation of the oil and gas industry.
- Development of a draft Gas Processing Plant Regulation for finalization in 2013.
- Developing draft best management practices for the reduction of greenhouse gas emissions during flaring and venting, for finalization and publication in 2013.

Energy Choices:

- Since the 2010 Progress Report, the Energy Solutions Centre has focused on energy efficiency as the primary energy resource to develop because it has been proven to be the most economic, environmentally sound and socially acceptable way of meeting our energy needs.
- The Energy Solutions Centre, Yukon Housing and Yukon College's Yukon Research Centre continue to work with federal, territorial and provincial partners to research energy efficient technologies for houses in cold climates.
- Based on the energy efficiency and renewable energy feasibility work conducted to date the Energy Solutions Centre and the Oil and Gas Resources Branch are working to develop a high level assessment of existing and potentially new energy sources. The work done provides us with tools that will help maintain the environment, the economy and a high quality of life in Yukon in the future.

As we continue to move forward, the *Energy Strategy for Yukon* will provide direction for developing, managing and using energy over the next decade.

Introduction

In January 2009, the Government of Yukon released the Energy Strategy for Yukon. The Energy Strategy provides a vision for how energy will be produced, conserved and used in Yukon.

The Energy Strategy focuses on four priorities:

1. Conserving and using energy more efficiently;
2. Increasing the supply and use of renewable energy;
3. Meeting current and future electricity needs; and
4. Managing responsible oil and gas development.

The Government of Yukon committed to monitor the implementation of the Energy Strategy and to report regularly on progress. The first progress report was published at the end of 2010. This is the second progress report and provides the status of the 24 priority actions identified in the strategy.

The Energy Strategy lays out the following vision and principles.

Vision

Yukon will have a sustainable and secure energy sector that is environmentally, economically and socially responsible; developing and using energy resources to meet Yukon's energy needs and generating benefits for Yukon people, both now and for generations to come.

Principles

Sustainability: developing an energy sector that is environmentally, economically and socially sustainable for present and future generations.

Energy security: ensuring a secure and reliable supply of energy at a reasonable cost and reducing dependence on non-renewable energy sources.

Self-sufficiency: promoting the environmentally, economically and socially responsible development and use of Yukon's energy resources.

Optimize benefits: optimizing socio-economic and environmental benefits and opportunities for Yukon from energy development, conservation and use.

Climate change policy coordination: coordinating climate change and energy policies and identifying opportunities to reduce greenhouse gas emissions.

Leadership: demonstrating Government of Yukon leadership in responsible energy management, including research and innovation, infrastructure development, efficiency and conservation.

Partnerships: engaging individuals, the private sector, First Nations, municipalities, the federal government and non-government organizations in developing and managing energy resources.

To ensure our vision is supported, these principles are taken into account whenever energy decisions are made.

Energy Priorities

The Energy Strategy for Yukon describes the government's priorities to improve energy efficiency and conservation, produce more renewable energy, meet electricity needs, responsibly develop oil and gas and make good energy choices. Under each priority there are specific actions that the Government of Yukon has committed to implement over the 10 year life of this Energy Strategy. The following pages highlight the progress made on the priority actions since the Energy Strategy Progress Report of 2010.

Efficiency and Conservation

The Government of Yukon is on course to achieve its energy efficiency targets, and it continues to work to realize efficiency and conservation priority actions that will reduce energy consumption, costs and emissions.

Following are the actions being taken to meet the priorities for efficiency and conservation:

Increase energy efficiency in Yukon by 20% by 2020.

- The Department of Energy, Mines and Resources' Energy Solutions Centre has the following programs for increasing energy efficiency in Yukon:
  - The Energy Solutions Centre "Storefront," where Yukoners are encouraged to stop by for program information and discuss energy questions and projects with Senior Energy Advisors. The storefront includes a borrowing library and other client focused educational resources.
  - Energy Efficiency Training, which is focused on building capacity within the territory in the area of energy efficiency.
  - Easy$ Tips Sheets, which present energy advice on a variety of topics, and are available as handouts and online at the Energy Solutions Centre web site.
  - The Good Energy Rebate Program, which works with local retailers and consumers using education and incentives to encourage the purchase of energy efficient products.
  - The second Refrigerator and Freezer Retirement Program, in partnership with Yukon Energy, which encourages Yukon residents to safely dispose of any older second refrigerators they are currently using by offering a rebate and free pick-up and disposal of old refrigerators.
  - Quick Start Energy Saver Kits, which are a collection of easy-to-install energy saving products that improve energy efficiency and home comfort. Items in the kit include foam gaskets for electrical outlets, low-flow shower heads and CFL light bulbs.
  - Energy Efficient Lighting Technology Demonstration and Evaluation, in which ESC is working with various local associations and businesses to pilot new lighting technologies and evaluate their performance in Yukon.

- Community Energy Planning, in partnership with the Department of Community Services, which helps Yukon communities to develop community energy plans that improve energy efficiency within the communities.

- Highways and Public Works' Property Management Division is:
  - Continuing to examine energy efficiency lighting upgrades in Government of Yukon buildings.
  - Continuing to review energy monitoring software options from various manufacturers.
  - Partnering with the Energy Solutions Centre and Yukon Energy to follow up on its energy meter installations in selected Whitehorse schools, with energy dashboards for a few additional schools in Whitehorse and Dawson City.
  - Requiring fuel suppliers to provide monthly electronic fuel use and electrical use data to develop baseline information on energy use and efficiency. This data populates the government's Public Buildings Energy Tracker, which is an electronic database that enables Property Management Division staff to make well-informed decisions about energy efficiency improvements to Government of Yukon buildings.

- Through a collaborative effort of the Government of Yukon, Yukon Energy and the YECL, a Yukon Electricity Conservation and Demand Management Potential Review was completed in 2011. This provides baseline information and projections on electricity usage in Yukon.

- Yukon Energy:
  - Completed an energy audit of its own facilities to determine a baseline for its energy usage and to prioritize projects to reduce operational energy consumption. This work resulted in lighting redesign, lighting retrofits, employee lunch and learns, an investigation of heat recovery options, and the development of a building energy tracking database for Yukon Energy facilities.
  - Partnered with the Energy Solutions Centre in 2011 to install six LED streetlights in Dawson City. The lights were monitored for cold weather performance and energy use. A follow-up pilot project is being conducted in partnership with the YECL to assess the technical suitability of a range of LED streetlights to be used in place of the current streetlights. The results of the second phase of the pilot will be shared in the summer of 2013.
  - Partnered with YECL to build on the results of the Conservation Potential Review by completing market characterization studies and designing residential and commercial electricity conservation programs to meet the specific needs of Yukon clients. This work culminated in the utilities completing a demand side management plan which includes programs for residential and commercial customers. The utilities have committed to an electricity conservation target of 8.5 GWh of sustained savings by 2018.
  - Is examining a number of potential projects that will improve the efficiency of its existing hydro and diesel units.
  - Is working with its industrial customers to complete energy audits and identify opportunities for improved energy efficiency in operations.
  - Offers *Dollars to Sense* courses to municipalities and First Nations in partnership with YECL and Natural Resources Canada (NRCan).
  - Offers coupons to incent purchase of car heater timers, LED light bulbs, and programmable thermostats, as well as tip sheets and an online energy calculator on the Yukon Energy website.
  - Provides education and engagement activities to involve the public in energy conservation behavior.

Reduce energy consumption in Yukon buildings.

- The Energy Solutions Centre has programs targeted at reducing energy consumption in residential, commercial and institutional buildings. For commercial and institutional buildings these include:
  - The StartPoint Energy Audit Service which is delivered by Energy Solutions Centre staff who provide commercial and institutional building owners with a free desktop audit based on the building owners' heating bills and building information.
  - The Commercial/Institutional Building Energy Plan program (CIBEP) where qualified contractors, hired by the Energy Solutions Centre, work with institutional and commercial building managers to conduct comprehensive (ASHREA level III) energy audits, and in consultation with building managers, develop building efficiency plans. Currently this program is focused on institutional buildings.

For residential buildings Energy Solutions Centre is developing the following programs:

- The Energy Efficiency Retrofit Incentive Program, to support homeowners in making informed, energy-conscious and cost-effective decisions when retrofitting their home. The program will combine existing Good Energy rebates (Energy Assessments and Heating Appliance rebates) with incentives for improving air leakage performance and for more capital-intensive projects such as the addition of insulation to walls, foundations and ceilings.
- The New Home Energy Efficiency Incentive Program, to support homeowners, homebuilders and general contractors in designing and constructing low-energy-use homes in Yukon. The program will incorporate existing Good Energy rebates (Energy Assessments, Heating and Home Appliance and Water Heating rebates) and will introduce new rebates for the construction of airtight, super-insulated thermal building envelopes.
- The Energy Solutions Centre continues to work with NRCan to help develop the next generation of the EnerGuide Rating System for homes and is promoting the use of the new rating system in Yukon.

- The Energy Solutions Centre has conducted desktop studies on the performance of air source heat pumps across Canada. The results show that the industry may be immature in Canada, as performance has not been as good as manufacturers' claims. The Energy Solutions Centre is continuing research on air source heat pump performance as well as monitoring similar research currently being conducted by Alaska's Cold Climate Housing Research Centre and the British Columbia government.

➢ Yukon Housing Corporation has:

- Built over 120 super-insulated housing units.
- Provided technical support to private builders who have now built over 20 super-insulated houses and at least 24 Super GreenHome multi-residential units. At least 40 more private Super GreenHome units are under construction.
- Continued to offer low interest loans for home repairs, including energy efficiency retrofits. In fiscal year 2010/11, $1.7 million was paid out under this program and $1.5 million was paid out in fiscal year 2011/2012. The interest rate for both years was 2.4%.
- Continued to conduct electronic performance monitoring. Currently monitoring is occurring on two houses in Watson Lake, three Habitat for Humanity units in Whitehorse, eight affordable housing units in a Whitehorse complex, and six row house units in Whitehorse.
- Established a building performance monitoring and data collection partnership with Yukon College to develop baseline data on energy consumption and efficiency. The college is working on the data analysis software to assist with, and potentially automatically analyse and report on, the data being collected from the housing sites, as well as with a pan-northern heat recovery ventilation monitoring project, and a vacuum insulated panel testing project.
- Acted as the Yukon administrator to deliver the NRCan Eco-energy program until the program's end on June 30, 2012.
- Continued in its role to support residential energy assessments in Yukon. There were 70 assessments in 2010, 118 in 2011 and 53 as of November 1, 2012.

- Continued with public outreach and education on energy efficient building practices.
- Continued to offer training courses on residential heat recovery ventilation each year.
- Trained 11 certified professionals to conduct inspections for the City of Whitehorse's new energy bylaw. Five city verifiers are still active. Training is ongoing to maintain a roster of city verifiers.

- The City of Whitehorse, in partnership with the Energy Solutions Centre and Yukon Housing, completed a *Summary of Home Heating Options* in 2012. The summary was developed as a tool for businesses, governments and home owners to assist them in choosing heating options that are optimal for varying preferences.

- In the summer of 2012, Yukon Energy worked with Yukon Electrical on a market characterization study that is helping to determine gaps in the uptake of energy efficient products in the residential and commercial sectors. The study has provided background for the utilities' demand side management plan and programs that are under development.

- The Energy Solutions Centre has hosted a number of courses over the past years to increase capacity within the Yukon building construction industry. These courses have included the following topics:

  - Advances in Lighting: techniques for reducing lighting energy cost, improving lighting design, and installing effective controls.
  - Wood Energy Technology Transfer Training: offered to wood heating professionals to help them install, inspect and maintain wood heating systems safely.
  - Indoor Air Quality: techniques to identify and solve indoor air quality problems.
  - Fuel Oil Heating: encouraged increasing expertise in the Yukon's oil heating industry.
  - House Retrofit: examined the computer modelling and pre- and post-energy audits for a house energy retrofit in the north.
  - Residential Solar Power: introduced residential solar power with a particular focus on northern latitudes.
  - Cold Climate Construction: provided basic building science and cold climate construction techniques.

- Small Commercial Air System Design: introduced the design of small commercial air systems. This was a Heating, Refrigeration and Air Conditioning Institute (HRAI) certification course.
- Life Cycle Costing for Green Buildings: introduced participants to life cycle costing as it applies to green building design.
- Energy Solutions Centre offered several courses in 2011 and 2012 and more courses are planned for 2013 and onward.

- Highways and Public Works:
  - Requires government-funded commercial and institutional construction and renovation to meet energy efficiency standards set by its Property Management Division.
  - Considers energy efficiency in Government of Yukon building renovations.
  - Is reviewing a New Energy Building Guide from NRCan that may be an improvement on HPW's current standards. If so, HPW will use this guide.

Reduce energy consumption for transportation in Yukon.

- Energy, Mines and Resources is investing in agriculture infrastructure to support production of Yukon grown food. Program funding under the Canada-Yukon Growing Forward Agreement supports increased local food production and, in turn, reduced energy consumption for food transportation. The Agreement provides an average of $978,000 annually until 2012-13 on a cost shared basis. Funding has been used to:
  - Assist community markets in Dawson City and Whitehorse.
  - Provide training opportunities.
  - Purchase specialized farm equipment.
  - Fund projects to increase farm productivity.
  - Fund efficiency upgrades on irrigation systems.

- The Energy Solutions Centre:
  - Is assessing options for hybrid/plug-in electric vehicles and the implications of large-scale adoption of this technology for Yukon electrical grids. A report on this assessment is planned for 2013.
  - Is supporting the Yukon College automotive program teaching gas engine to electric drive conversion.
  - Published two transportation related papers, since 2010:
    1. *IPLC Performance Validity Test: Summary of Results September 2011*. This report shows how much electricity the Government of Yukon saved in the winter of 2010-2011 by optimizing its Intelligent Parking Lot Controllers; and
    2. *Yukon Transportation Sector Information Paper*, June 2012, which provides an overview of Yukon's transportation sector.

- The Energy Solutions Centre and the Climate Change Secretariat are in the process of completing an extensive study of the Yukon transportation sector, which will be used as a baseline from which to develop options to reduce greenhouse gas emissions.

- The Motor Vehicles Branch:
  - In collaboration with NRCan, offers training regularly to assist licensees of commercial vehicles in achieving greater fuel efficiency.
  - Has included information on fuel efficiency in the new Yukon Driver's Basic Handbook for Cars and Light Trucks.
  - Has distributed *Making the Shift: Smart Driving for Professional Drivers* to all Motor Vehicles offices.
  - Has included questions regarding the fuel efficient operation of vehicles on the commercial driver knowledge tests and plans to have a complete chapter on the fuel efficient operation of vehicles in its new Commercial Driver Handbook by March 31, 2013.

Promote the use of energy efficient products by providing rebates for products that meet energy performance standards.

- The Energy Solutions Centre's Good Energy Rebate program continues to be refined and may expand to new items. The 2010/11 program had 1,065 successful applicants (approximately 14% of Yukon households) receiving rebates for 855 non-heating appliances and 207 heating appliances. The 2011/12 program had 1,072 successful applicants (approximately 14% of Yukon households) receiving rebates for 792 non-heating appliances and 210 heating appliances. Between 2010 and 2012, a small number of other rebates were issued for other energy efficient technologies.

Improve energy efficiency for Government of Yukon operations.

Energy efficiency standards are being implemented. Government-funded commercial and institutional construction and renovation is required to meet energy efficiency standards set by the Property Management Division of the Department of Highways and Public Works. The new F.H. Collins Secondary School is being designed with energy efficiency as a priority consideration.

- Government of Yukon's Fleet Vehicle Agency is considering including the full life cycle cost of fleet vehicles, including post-Government of Yukon ownership, in its vehicle purchase decisions. As well,
  - Vehicle fuel efficiency standards are in place for the Government of Yukon. Older fleet vehicles are continually phased out and replaced with more fuel-efficient vehicles.
  - Fuel economy is a key consideration in new vehicle acquisition tenders.

- The Government of Yukon adopted a green procurement policy in June 2010 and is developing a website for information on standards identified in the policy. The policy is influencing how the government makes purchasing decisions for goods, construction and services.

- The Department of Education's environmental stewardship program has a number of on-going projects, including:
  - School bus route optimization.
  - The school bus contractor replaced its fleet with new and more efficient school buses.
  - Waste diversion projects in Vanier Secondary, Whitehorse Elementary, Christ the King Elementary, and Selkirk Elementary schools, and the Gadzoodza residence. These five Yukon schools now have waste diversion equipment installed and three more are planned to receive equipment.
  - Free transit for students. Beginning in May and June 2012 the Department of Education offered Porter Creek and Crestview students attending FH Collins and Vanier Secondary schools free public transit passes for travel to and from school as well as any other time the students wished. Based on the success of the spring offering, the department is currently offering transit passes to students at the same schools who live along the Hamilton Boulevard corridor. This pilot project will run until June 2013.

Renewable Energy

As with its energy efficiency target, the Government of Yukon and its partners are aiming to achieve a 20% increase in Yukon's renewable energy supply by 2020 as per targets set within the 2009 Energy Strategy.

Following are the actions being taken to meet the priorities for renewable energy:

Increase renewable energy supply in Yukon by 20% by 2020.

- The Energy Solutions Centre:
  - Explores, assesses and monitors renewable energy production in Yukon to ensure this target is met by 2020.
  - Continues to promote solar thermal, solar electric, wood and wind energy through its Good Energy Rebate Program, renewable energy demonstration projects and its wind prospecting service.
- Yukon Energy continues to investigate renewable supply options to meet growing electrical demand. Options include new hydro, wind, geothermal and biomass opportunities.
  - The Aishihik third turbine and Mayo B projects have increased Yukon Energy's renewable generation capacity by 22% by enhancing existing hydro generation infrastructure.
  - Yukon Energy is also working to increase the capacity of existing hydro facilities by investigating the Marsh Lake and Mayo Lake enhanced storage concepts.

Develop a policy framework for geothermal energy.

- Energy, Mines and Resources:
  - Has completed cross-jurisdictional research of geothermal policies, including review of work performed by the Pembina Institute for the Government of the Northwest Territories.

- Is participating in a national forum to discuss geothermal policy and regulation across Canada.
- Is scoping and drafting issues that will inform the drafting of a geothermal policy framework for Yukon.

Support and demonstrate renewable energy projects (wind, hydro, solar, wood, or geothermal) in communities off the electrical grid to reduce diesel use.

- The Energy Solutions Centre:
  - Partnered with the Town of Watson Lake and the Northern Lights Centre to purchase, install, operate and monitor a 4.4 kW PV system on the Northern Lights Centre building. The system was commissioned in August 2011.
  - Partnered with the Vuntut Gwitchin First Nation and Kobayashi + Zedda Architects Ltd. to monitor and report to the public on the performance of two solar electric PV systems installed in the community of Old Crow. The five-year monitoring project began in 2012.
  - Continues to offer its wind prospecting service at two client sites per year to assess wind energy potential.
  - Recently updated its Yukon renewable energy resource map on the Energy Solutions Centre website (www.esc.gov.yk.ca) with data on wind, geothermal and hydro resources in the territory.
  - In partnership with the Kluane First Nation, conducted a net metering solar pilot project that includes a 4.7 kW PV system on a Kluane First Nation government building.

Conduct pilot studies to assess the feasibility of renewable energy initiatives.

- The Energy Solutions Centre partnered with the Town of Watson Lake to examine rehabilitating and expanding the existing district energy system in that community. Also partnered with the City of Whitehorse and Highways and

Public Works to complete a City of Whitehorse District Energy System pre-feasibility study in 2010 and is currently working with other Government of Yukon branches, the City of Whitehorse, and Yukon Energy to conduct a full feasibility for the City.
➢ The Energy Solutions Centre worked with the Little Salmon/Carmacks First Nation to install and commission a solar powered irrigation system for the First Nation's community garden.
➢ A pellet boiler system is installed in the new Whitehorse Correctional Centre (with propane backup) and has been operating since November 2011.
➢ The Energy Solutions Centre continues to work with partners at the Yukon Research Centre to conduct and support pilot studies to monitor and demonstrate the viability of solar electric, solar thermal and wind energy technologies, including net metering pilots in Burwash Landing and Whitehorse.
➢ After completing a detailed feasibility study, the Energy Solutions Centre and the departments of Highways and Public Works and Education are evaluating options to move forward with biomass heating systems for Hidden Valley School, Elijah Smith School and the Highways and Public Works sign shop.
➢ The Property Management Division of Highways and Public Works is working with the municipality of Dawson City to install a biomass boiler that will use wood chips to heat the new wastewater treatment plant, the existing reservoir pump house and Dawson City's potable water system. The facility was substantially completed in January 2013. Wood chips are provided by a Dawson City based company.
➢ Energy, Mines and Resources has completed a draft Biomass Energy Strategy, which is anticipated to be reviewed in a public consultation process in 2013.
Promote renewable energy sources for heating and transportation.
• The Energy Solutions Centre's Good Energy Rebate program offers rebates for wood stoves, wood pellet boilers and solar domestic hot water systems to promote renewable energy sources for heating.

- In 2007 Energy Solutions Centre completed a study, *Waste Bio-oil Supply Survey*, exploring and evaluating options for waste cooking oil as a biofuel. Biodiesel is now being made in Yukon, and a pilot of its use as a heating fuel has been successful to date. A brief qualitative test of 100% biodiesel in a diesel-powered vehicle was also completed. The vehicle performed well, appeared to be quieter and emissions appeared to be lower. Based on the good results to date, further work is proposed.

- The Energy Solutions Centre has continued to include training and technical assistance to build local skills for renewable energy production. Adding to the list of projects since the 2010 Progress Report is a solar electric installation monitoring project in Old Crow and six wind monitoring projects across Yukon.

Electricity

Since the 2010 Energy Strategy Progress Report, the Government of Yukon, Yukon residents and the two electric utilities have met frequently in working groups, workshops and consultative meetings to find ways to make the best use of Yukon's electricity generating resources. These meetings have resulted in a draft Demand Side Management Plan, a draft Independent Power Production Policy, and a draft Net Metering Policy that reflect the priorities for electricity under the Energy Strategy. The following is a description of each of these actions.

Support strategic investments in infrastructure to increase the supply of electricity from renewable sources through the enhancement of existing hydroelectric infrastructure.

- The Mayo B hydro enhancement project was completed at the end of 2011 and resulted in 10 MW of additional capacity to the Mayo hydro plant (from 5 MW to 15 MW).
- The Carmacks-Stewart transmission line, which connected Yukon's two hydro grids into one Yukon Integrated System (YIS), was completed in the summer of 2011.
- The third turbine, installed at the Aishihik hydro facility, was in service by December, 2011. This new turbine has a 7 MW capacity.
- Enhancements made since 2010 have increased Yukon's renewable energy capacity in the wintertime to a total of 72 MW.
- Yukon Energy is studying options for increasing the amount of available water for winter hydro production at its Whitehorse and Aishihik facilities. The corporation continues to assess the potential of new developments and energy storage options needed to integrate renewable energy into Yukon's existing hydro grids for development in 2020 or later.

- The Yukon Development Corporation and Yukon Energy continue to investigate the geothermal potential of several sites throughout Yukon. Wind monitoring activities continue and will focus on two study sites (Ferry Hill near Stewart Crossing and Mt. Sumanik near Whitehorse).

Assess the feasibility of expanding the Yukon transmission system to connect to other communities, industrial projects or jurisdictions.

- Yukon Energy is in discussions with potential mining customers about the feasibility of providing grid electricity to new mines. The corporation will also continue to explore the potential for grid expansions within Yukon and with interested neighbouring jurisdictions such as BC and Alaska.
- Yukon Energy is updating its 20-year resource plan. As part of this update, the corporation has held a number of workshops on the following topics:
  - March 2011 – Energy
  - October 2011 – Waste to Energy
  - December 2011 – Biomass
  - January 2012 – Liquefied Natural Gas
  - April 2012 – Energy Conservation

  The draft plan was filed with the Yukon Utilities Board in November 2012.

Update and develop a policy framework for electricity that emphasizes efficiency, conservation and renewable energy.

- Energy, Mines and Resources led a consultation that took place between November 2009 and February 2010 on an independent power production and net metering discussion paper.
  - As a result of this and subsequent work a final micro-generation policy for Yukon is expected to be released in 2013.
  - Energy, Mines and Resources continues to work with its utility partners to develop a draft independent power production policy for public consultation.
- Yukon Energy commissioned a residential-sized solar net metering pilot project for the Whitehorse fishway in August 24, 2012. The solar array consists of four 235 kW panels. Yukon Energy plans to monitor the system every year for its expected 25-year life span.

Develop and implement demand management programs and incentives to promote energy efficiency and conservation.

- A joint Government of Yukon - utilities working group was formed in 2011 to examine the opportunities for demandside management in Yukon. This work has resulted in:
  - A Residential End Use Survey (June 2011).
  - A stakeholder engagement project (Summer 2011).
  - The development and release of a Conservation Potential Review report (January 2012).
  - A Market Characterization study (July 2012).
  - A draft utility demand-side management plan to be implemented in conjunction with the Government of Yukon's ongoing demand management programs and activities.
  - Ongoing pilot projects and sector research.
- Energy efficiency and conservation is promoted through the Energy Solutions Centre's Good Energy Rebate program. In 2010/11 a total of 12 rebates were issued in diesel communities, resulting in an estimated total appliance lifetime energy savings of 9,434 kWh and 6.51 tonnes of carbon dioxide equivalent emissions (CO_2e). In 2011/12 a total of 17 rebates were issued in diesel communities, resulting in an estimated total lifetime energy savings of 11,125 kWh and 7.67 tonnes of CO_2e.

Support research and development of technologies and policies to optimize the use of hydroelectricity.

- Yukon Energy is studying several short-term energy storage technologies that will enable the corporation to better integrate non-dispatchable renewable energy technologies into Yukon's electrical grid.

Consider appropriate roles, responsibilities and corporate structure for Yukon Development Corporation and Yukon Energy Corporation to ensure effective management and operation, and optimize the efficiency and reliability of electricity generation and distribution.
➢ The Government of Yukon works in partnership with the Yukon Development Corporation and Yukon Energy to optimize the effective management of Yukon's electrical resources within the existing legislative and policy framework.
➢ Yukon Energy has established an Energy Conservation department to undertake Demand-Side Management program development and implementation for the utility.

Oil and Gas

The responsible development of oil and gas resources in Yukon is a priority to ensure these resources are available for local use as well as for export.

Energy, Mines and Resources' Oil and Gas Resources Branch is strategically developing opportunities for Yukon's oil and gas resources through oil and gas dispositions, regulatory and guideline reforms, and through networking with other governments and industry.

Following are the actions taken to meet the Energy Strategy priorities for Yukon's oil and gas resources:

Support strategic opportunities to replace imported diesel fuel with Yukon's oil and gas resources.

- The Oil and Gas Resources Branch monitors private sector interests and activities, and continues to meet with industry partners to provide advice and respond to information requests. The branch:
  - Has issued well licenses to industry and signed benefits agreements with First Nations and industry to advance delineation of Eagle Plains oil and gas reserves while benefitting Yukon residents and industry.
  - Is engaging industry, First Nation development corporations and other key stakeholders on how to support strategic opportunities to replace imported diesel fuel with Yukon's oil and gas resources.
  - Continues to promote access to gas as one of its seven strategic interests in discussions with the Alaska Highway pipeline proponents and other major stakeholders to ensure that federal regulators and proponents are aware of the interest.
  - Is collaborating with Yukon Geological Survey to advance knowledge of Eagle Plains and Liard basins.
  - Supports the Vuntut Development Corporation in undertaking a feasibility study and business plan to commercialize Eagle Plains gas to supply Yukon industrial and utility customers.

- Will complete a feasibility study of a small diameter pipeline and liquid natural gas plant.

Develop a competitive and comprehensive oil and gas regulatory regime, which will emphasize performance-based compliance through the establishment of new pipeline regulations under the *Oil and Gas Act*.

- The Oil and Gas Resources Branch:
  - Continues legislative work to modernize the *Yukon Oil and Gas Act* (YOGA) and its regulations with the goal of providing increased certainty, stability, transparency and simplicity.
  - Is developing procedures, guidelines and directives for the regulations.
  - Is amending the five existing regulations and introducing gas processing plant and pipeline regulations.
  - Is developing an oil and gas strategy including public information and education in collaboration with external partners and processes.

- A number of "best practices guidelines" for the oil and gas industry are complete or underway, including trappers guidelines (complete), new caribou guidelines (pending), wetlands guidelines (under development), and minimizing greenhouse gas emissions guidelines (under development) as well as updating the seismic best practices guidelines.

Prepare for northern pipeline developments such as the Alaska Highway Pipeline.

- The Oil and Gas Resources Branch is in discussions with pipeline proponents and key stakeholders to ensure Yukon's seven strategic interests are met through the planning, regulatory review, construction and operation phases of a northern pipeline. Benefit agreement negotiations between developers and First Nations are also supported by the branch.

Promote private sector investment in the development of Yukon's oil and gas resources.

- Energy, Mines and Resources issues and manages oil and gas rights. The department also participates in North American trade shows to attract investment and provides geological and resource related information to developers.

Finalize and implement an agreement with the federal government for sharing management and revenues for offshore oil and gas.

- The Government of Yukon continues to implement the 2008 EMR-Aboriginal Affairs and Northern Development Canada (AANDC) Offshore Memorandum of Understanding, consistent with the 1993 Canada-Yukon Oil and Gas Accord (Accord), which enhances Yukon's role in offshore oil and gas management.
- The Government of Yukon continues to participate on the interim joint Federal/Territorial Offshore Committee to advance Yukon's offshore interests on Beaufort Sea oil and gas management issues and policy matters.
- The Government of Yukon continues to request that Canada commence negotiations with Yukon on outstanding offshore commitments in the Accord, to finalize a shared offshore management regime and revenue sharing arrangement.
- The Government of Yukon continues to prepare for future offshore negotiations as committed to in the Accord.
- The Government of Yukon continues to collaborate with Canada, industry, the Government of the Northwest Territories and the Inuvialuit on Beaufort Sea planning initiatives, such as the Beaufort Regional Environmental Assessment, and on benefits agreements to create employment and business opportunities for Yukon residents.

Energy Choices

The Energy Strategy outlined actions to prioritize energy choices to set long-term and short-term direction for the Government of Yukon. The following is the status of actions to meet the priorities for making energy choices.

Assess new and existing energy sources that could be developed in Yukon.

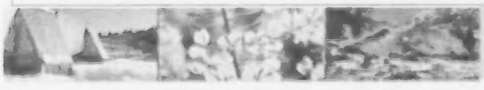
- Since the 2010 Progress Report, the Energy Solutions Centre has focused on energy efficiency as the primary energy resource to develop because it has been proven to be the most economic, environmentally sound and socially acceptable way of meeting our energy needs. Future assessments of energy resources should include a cost and efficacy comparison against energy efficiency/demand-side management.
- The Energy Solutions Centre, Yukon Housing and Yukon College's Yukon Research Centre continue to work with federal, territorial and provincial partners to research energy efficient technologies for houses in cold climates.
- Based on the energy efficiency and renewable energy feasibility work conducted to date the Energy Solutions Centre and the Oil and Gas Resources Branch are working to develop a high level assessment of existing and potentially new energy sources.

Hold public consultation on a policy framework for coal bed methane, coal and nuclear power before permitting any development.

- The Government of Yukon is not proceeding with coal bed methane, coal and nuclear power policy development or permitting at this time.

Monitor implementation of the Energy Strategy and report regularly on progress.

- This is the second progress report. Implementation leads across the Government of Yukon will continue to meet quarterly and keep abreast of priority action item implementation in order to report on progress every two years.



Conclusion

The next progress report is planned to be released in early 2015. In the interim, the Government of Yukon will continue to monitor the implementation of the Energy Strategy, and will continue to communicate with Yukon citizens in order to meet our Energy Strategy vision.

Enquiries about this progress report or the implementation of the Energy Strategy for Yukon can be directed to:

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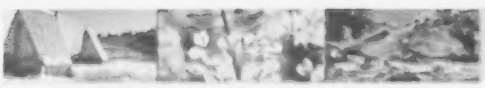

Appendix: Implementation Working Group

Representatives from the following departments and organizations are involved in the Energy Strategy for Yukon Implementation Working Group:

- Economic Development, Government of Yukon
- Education, Government of Yukon
- Energy, Mines and Resources, Government of Yukon
- Environment, Government of Yukon
- Highways & Public Works, Government of Yukon
- Yukon Development Corporation
- Yukon Housing Corporation